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Title	A Revision of the Subgenus Oreomelissa of the Genus Andrena of Eastern Asia (Hymenoptera, Andrenidae)
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A Revision of the Subgenus *Oreomelissa* of the Genus *Andrena* of Eastern Asia (Hymenoptera, Andrenidae)[1), 2),3)]

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Abstract. The subgenus *Oreomelissa* of the genus *Andrena* is revised, and 11 species and 2 subspecies are recognized. Three of them, *Andrena fani*, *A. gangcana* and *A. flavolateralis* are new to science, 2 homonymies, *Andrena* (*Oreomelissa*) *montana* Wu and A. (*Oreomelissa*) *nigra* Wu are nominated as new names, *A.* (*Oreomelissa*) *setosifemoralis* Wu and *A.* (*Oreomelissa*) *nigricula* Wu, respectively. Four species, A. *kamikochiana*, A. *coitana*, A. *amurensis* and A. *mitakensis* are newly recorded from China. A key to East Asian species of this subgenus is presented.

Key words: txonomy, Hymenoptera, Andrenidae, *Andrena*, *Oreomelissa*, revision, east Asia, new species, new name.

Introduction

Hirashima and Tadauchi (1975) erected a new subgenus *Oreomelissa* based on the *mitakensis*-group of the subgenus *Calomelissa*. It included 4 Eurasian species. Since then, 4 more new species were added to this subgenus (Wu, 1982, 1985). Osytshnjuk (1995) placed *Andrena amurensis* Friese and Xu and Tadauchi (1997) placed *Andrena anthracina* Morawitz in this subgenus, respectively. In the present study, we treat 11 East Asian species in this subgenus, one of them are divided into 2 subspecies, 3 of

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3) Results from the China-Japan Co-operative Study on "Studies on Systematics, Evolution and Biogeography of Asian *Andrena* (Hym., Apoidea, Andrenidae)" No. 10.

them are new to science, 4 are newly recorded from China and 1 from Mongolia. *Andrena* (*Oreomelissa*) *setosifemoralis* is given as a new name for *A.* (*Oreomelissa*) *montana* Wu which was preoccupied as *A. montana* Warncke, 1973, also *A.* (*Oreomelissa*) *nigricula* is as a new name for *A.* (*Oreomelissa*) *nigra* Wu preoccupied as *A. nigra* Saunders, 1908. *Andrena* (*Oreomelissa*) *xinjiangensis* Wu is moved to the subgenus *Euandrena*. The holotypes will be preserved in the Institute of Zoology, Academic Sinica, Beijing and some paratypes are also preserved in the Entomological Laboratory, Kyushu University, Fukuoka.

Subgenus *Oreomelissa* Hirashima et Tadauchi

Oreomelissa Hirashima et Tadauchi, 1975, J. Fac. Agr., Kyushu Univ., 19: 175-177.
Type-species: *Andrena mitakensis* Hirashima, 1963, by original designation.

This subgenus is characterized by the face above antennal fossae to vertex strongly convex, arched, the fore wings with vein 1st m-cu receiving second submarginal cell beyond middle or at end of cell, the dorsal propodeal face being finely tessellate to densely tessellate, not roughened. It is similar to the subgenus *Graecandrena* Warncke in having the narrow and deep facial fovea, not roughened dorsal propodeal face and more or less polished metasomal terga, but it is easily separated from the *Graecandrena* by taller and arched vertex in both sexes and yellowish white clypeus in male.

Female: Facial fovea narrow and deep, separated from inner margin of eye by a shiny punctate space; facial quadrangle longer than or equal to broad; pronotum with distinct humeral angle or lacking; dorsal propodeal face not roughened, propodeal corbicula poor; metasomal terga polished or weakly shiny.

Male: Flagellar segments as in female, FL1 elongate; vertex distinctly arched; clypeus yellowish white; lower paraocular area with same color maculae; pronotum with or without humeral angle, dorsoventral ridge lacking; Sternum 6 flat apically.

Key to the East Asian females of the subgenus *Oreomelissa*

1 Larger, length about 10-11mm; genal area narrower than eye 2
- Smaller, length less than 10mm; genal area broader than eye 3
2 Face above antennal fossae weakly punctate; process of labrum triangular, moderate; humeral angle lacking; metasomal terga weakly and sparsely punctate ..... *mitakensis* Hirashima
- Face above antennal fossae strongly punctate, roughened; process of labrum triangular, small; humeral angle distinct; metasomal terga strongly and closely punctate ..... *amurensis* Friese
3 Interior face of hind femora with a row of spines 4
- Interior face of hind femora without a row of spines 6
4 Process of labrum small, triangular with apex thickened; clypeus almost shagreening except apicomedial area weakly tessellate, shiny with obscure to distinct longitudinal impunctate median space; length 7-8mm ..... *submontana* Wu
- Process of labrum moderate, rounded apically; clypeus smooth and shiny mostly, less tessellate 5

5 Clypeus with close punctures, median longitudinal impunctate space narrow; mesoscutum with distinct close punctures; metasomal terga with sparse punctures .... *nigricula* Wu nom. n.
- Clypeus with sparse punctures, median longitudinal impunctate space broad; mesoscutum with obscure punctures; metasomal terga smooth and shiny, with finely punctures .... *setosifemoralis* Wu nom. n.
6 Metasomal terga weakly tessellate, punctures scattered or obscure 7
- Metasomal terga smooth and shiny, punctures distinct, dense or sparse 8
7 Body slender, length 9.2-9.5mm; mesoscutum nearly impunctate; propodeum finely granulate ..... *fani* sp. n.
- Body robust, length 9mm; mesoscutum closely punctate; propodeum strongly tessellate ..... *gangcana* sp. n.
8 Clypeus nearly shagreening all over, mesoscutum with crowded punctures .... *kamikochiana* Hirashima
- Clypeus less shagreening, weakly tessellate and shiny mostly 9
9 Facial fovea separated from orbit of eye by a broad space 10
- Facial fovea close to orbit of eye; process of labrum convex, slightly emarginate apically; clypeus, mesoscutum and metasomal terga smooth and shiny .... *anthracina* Morawitz
10 Mesoscutum finely tessellate, with sparse and weak punctures; metasomal terga smooth and shiny, with scattered and weak punctures.....*coitana pilosodorsata* Alfken
- Mesoscutum densely tessellate, with close punctures; metasomal terga weakly to finely tessellate, with relatively dense punctures ..... *coitana coitana* (Kirby)

Key to the East Asian males of the subgenus *Oreomelissa*

1 Pronotum without humeral angle 2
- Pronotum with distinct humeral angle 6
2 Larger, length about 10mm; lower paraocular area with large yellowish white maculae ..... *mitakensis* Hirashima
- Small, length less than 7mm; lower paraocular area with small yellowish white maculae or not 3
3 Mesoscutum and scutellum weakly tessellate or almost so, shiny 4
- Mesoscutum and scutellum finely to strongly tessellate except medial area of mesoscutum weakly tessellate; vestiture mainly with black hairs ..... *fani* sp. n.
4 Process of labrum entire, broad; propodeal enclosure with weak rugulae basally; metasomal terga strongly shiny ..... *flavolateralis* sp. n.
- Process of labrum convex, emarginate apically 5
5 Propodeal enclosure weakly rugulose basally, dorsal face finely tessellate, weakly shiny; metasomal terga strongly shiny ..... *anthracina* Morawitz
- Propodeal enclosure and dorsal face strongly tessellate; metasomal terga weakly shiny ..... *gangcana* sp. n.
6 FL1 longer than FL2+3; metasomal terga smooth and shiny with minute, relatively dense punctures ..... *nigricula* Wu nom. n.
- FL1 shorter than FL2+3, metasomal terga with punctures various 7
7 Propodeal enclosure strongly rugosed at basal half; lower paraocular area with large

maculae ..... *kamikochiana* Hirashima
- Propodeal enclosure weakly rugosed basally; lower paraocular area with small maculae ..... *coitana pilosodorsata* Alfken

1. *Andrena* (*Oreomelissa*) *mitakensis* Hirashima

Andrena (*Calomelissa*) *mitakensis* Hirashima, 1963, J. Fac. Agr., Kyushu Univ., 12: 248 [female & male, Japan]; Hirashima, 1966, J. Fac. Agr., Kyushu Univ., 14: 112-113 [female & male, in key].

Andrena (*Oreomelissa*) *mitakensis*: Hirashima and Tadauchi, 1975, J. Fac. Agr., Kyushu Univ., 19: 178-179. Tadauchi, 1989, Check List Jap. Insects, 684; Osytshnjuk, 1995, Key Insects Russ. Far East, 4: 495, 517 [female & male, in key, Russian Far East] .

Specimens examined: China: 2 females, Caizipin, Mt. Qinling, Shannxi Prov., 9. viii. 1979 (T-g. Hou); 1 female, Fupin, Mt. Qinling, Shannxi Prov., 2. viii. 1979 (T-g. Hou).

Remarks: This species is similar to *Andrena amurensis* Friese, but differs from *amurensis* by the face above antennal fossae to vertex less roughened, the promotum without humeral angle and the metasomal terga with weak scattered PP in female.

Distribution: China (new record: Shannxi Prov.); Japan (Hokkaido, Honshu); Russia (Far East area).

Floral associations (Japan): *Lactuca denticulata* Maxim., *Cirsium* sp., *Cosmos bipinnatus* Cav., *Salvia nipponica* Miq. and *Aralia cordata* Regel.

2. *Andrena* (*Oreomelissa*) *amurensis* Friese

Andrena amurensis Friese, 1922, Konowia, 212 [female & male, Russia]; Yasumatsu, 1941, Peking nat. Hist. Bull. 15: 273 [in list].

Andrena (*Oreomelissa*) *amurensis*: Osytshnjuk, 1995, Key Insects Russ. Far East, 4: 494, 517 [female & male, in key, Russian Far East]; Tadauchi *et al.*, 1997, Esakia, (37): 199-201 [female, Korea].

Specimens examined: Korea: 1 female, Mt. Kongo, Kogendo, 10. ix. 1931 (C. Takeya). China: 1 female, Hsiao-ling, Jilin Prov., 15. vii.1939 (M. Volkoff).

Remarks: This species is separated from *Andrena mitakensis* Hirashima by the face above antennal fossae strongly roughened, the vertex with distinct PP; the pronotum with humeral angle and the metasomal terga with close PP in female.

Distribution: China (new record, Jilin Prov.); North Korea (Mt. Kongo); Russia (Amur, Far East area).

Floral association: Not available.

3. *Andrena* (*Oreomelissa*) *submontana* Wu
(Fig. 1: A – E)

Andrena (*Oreomelissa*) *submontana* Wu, 1982, Insects Xizang, 2: 386 [female, China];

Wu, 1992, Insects Hengduan Mount. Reg., 2: 1380 [in list].

Specimens examined: China: 2 females, Huangyuan, 1250 m, Qinghai Prov., 15. viii. 1996 (H-l. Xu); 1 female, same locality and date as above (O. Tadauchi); 1 female, Xiaozhongdian, 3200 m, Yunnan Prov., 2. viii. 1984 (J-g. Fan); 1 female, Zhongdian, 2900 m, Yunnan Prov., 7. viii. 1984 (J-g. Fan); 1 female, Zhongdian, 2400 m, Yunnan Prov., 8. viii. 1984 (J-g. Fan).

Remarks: This species is similar to *Andrena kamikochiana* Hirashima, but differes from *kamikochiana* by the pronotum with humeral angle and the hind femora with inner spines in female.

Distribution: China (Xizang, Qinghai, Yunnan Provs.).

Floral associations: *Brassica campetris*, *Insula* sp.

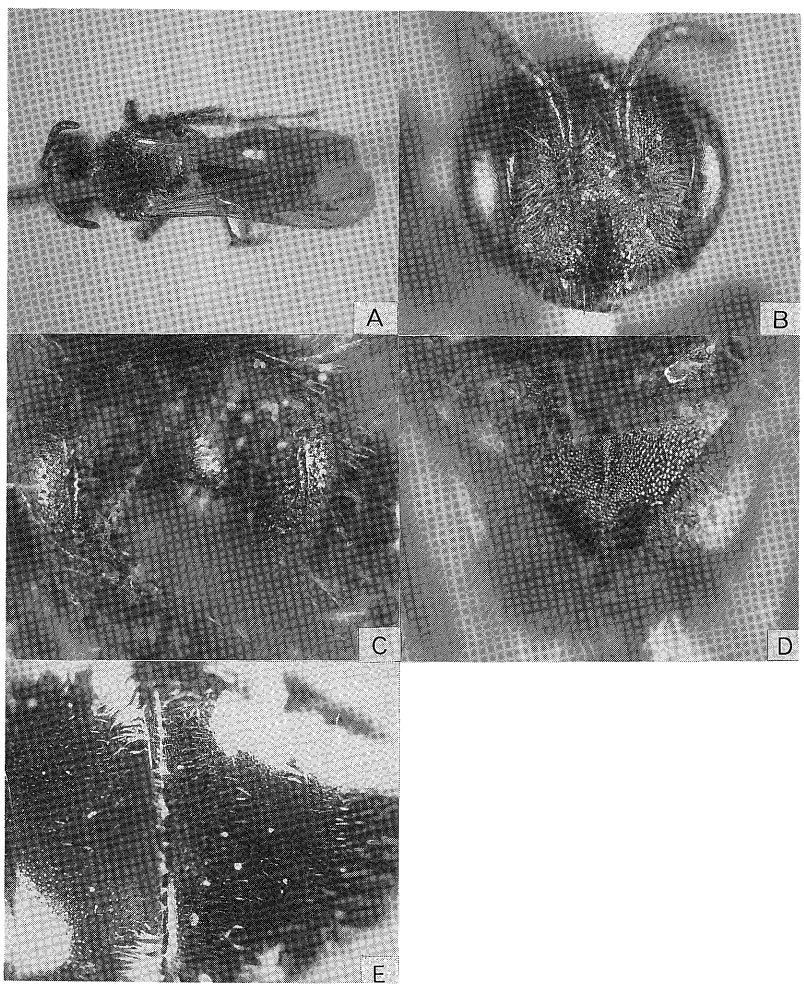

Fig. 1. *Andrena (Oreomelissa) submontana* Wu, female. A: whole body; B: head in frontal view; C: mesoscutum; D: propodeum; E: metasomal terga.

4. *Andrena* (*Oreomelissa*) *nigricula* Wu nom. n.
(Figs. 2: A – E, 3: A - E)

Andrena (*Oreomelissa*) *nigra* Wu, 1982, Insects Xizang, 2: 386-387 [female & male, China]; Wu, 1992, Insects Hengduan Mount. Reg., 2: 1380 [in list], preoccupied by *Andrena nigra* Saunders, 1908.

Specimens examined: China: new localities: 1 female, Lingxia, 2200 m, Shannxi Prov., 3. viii. 1974 (Y-h. Han); 2 females, Mt. Emei, 1800-2000 m, Sichuan Prov., 21-29. viii. 1957 (F-x. Zhu); 1 female, Miloya, Li County, 2700 m, Sichuan Prov., 12. viii. 1983 (X-z. Zhang); 1 female and 2 males, Lidipin, Weixi, 3200 m, Yunnan Prov., 13-15. viii. 1984 (J-g. Fan); 1 female, Pantiange, Weixi, 2900 m, Yunnan, 17. vii. 1981 (S-y. Wang); 1 female, Mt. Baiman Snow, Deqing County, Yunnan, 28. viii. 1981

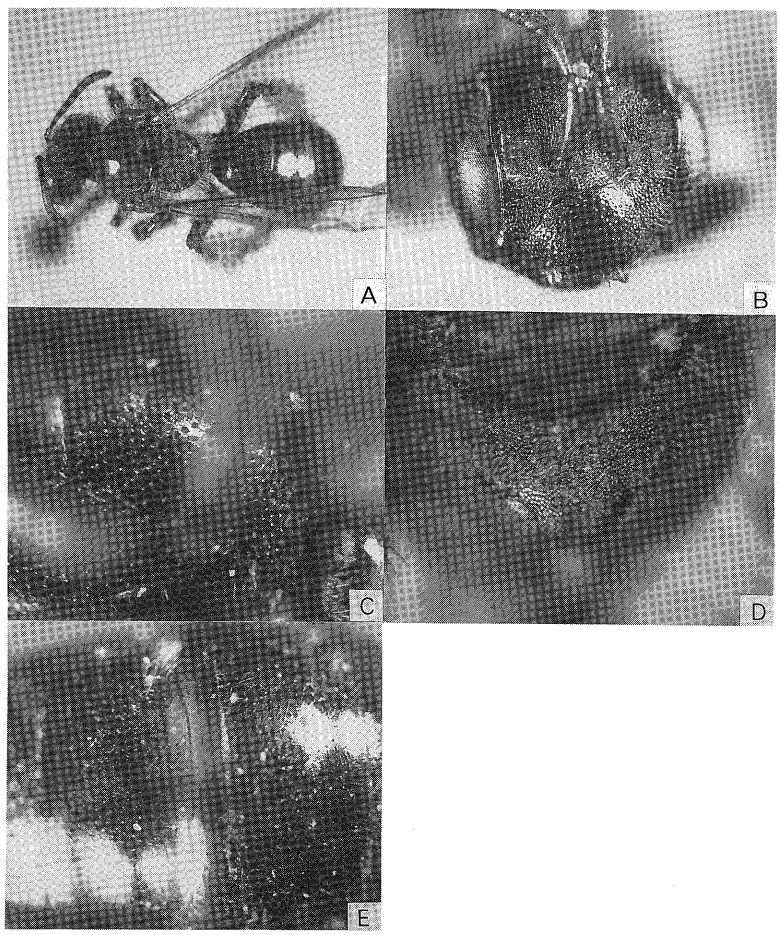

Fig. 2. *Andrena (Oreomelissa) nigricula* Wu nom. n., female. A: whole body; B: head in frontal view; C: mesoscutum; D: propodeum; E: metasomal terga.

(S-y. Wang); 1 male, Maoniupin, Lijiang County, Yunnan, 18. viii. 1984 (J-g. Fan).

Remarks: This species is nominated as a new specific epithet *nigricula* for *nigra* Wu, which was preoccupied by *Andrena nigra* Saunders, 1908. It is similar to *Andrena setosifemoralis*, but it is separated from *setosifemoralis* by the characters given in the key.

Distribution: China (Xizang, Shannxi, Sichuan, Yunnan Provs.).

Floral association: Not available.

5. *Andrena* (*Oreomelissa*) *setosifemoralis* Wu nom. n.

(Fig. 4: A – E)

Andrena (*Oreomelissa*) *montana* Wu, 1982, Insects Xizang, 2: 385-386 [female & male, China], preoccupied by *Andrena montana* Warncke, 1973.

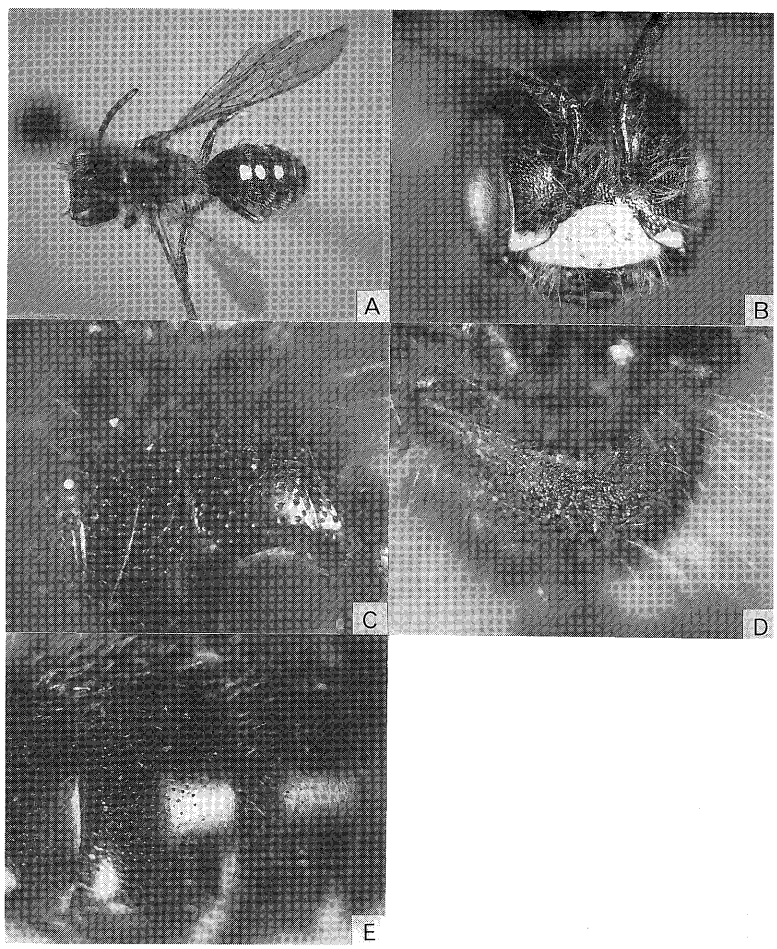

Fig. 3. *Andrena (Oreomelissa) nigricula* Wu nom. n., male. A: whole body; B: head in frontal view; C: mesoscutum; D: propodeum; E: metasomal terga.

Specimens examined: China: new localities: 1 female, Dangxiong, Xizang, 21. vi. 1993 (D-r. Yang); 1 female, Mangkang, 3250 m, Xizang, 9. viii. 1982 (X-z. Zhang); 2 females, Bulang, Yushu, 3800 m, Qinghai Prov., 10-12. viii. 1964 (S-r. Wang); 1 female, Gelong, Yushu, 3700 m, Qinghai Prov., 10. vii. 1964 (S-r. Wang); 1 female, Gaipin, Maerkang, 3230 m, Sichuan Prov., 8. vii. 1961 (Z-f. Li); 1 female, Mt. Meiling Snow, Deqing, 3350 m, Yunnan Prov., 25. vii. 1982 (X-z. Zhang).

Remarks: This species is nominated as a new specific epithet *setosifemoralis* for *montana* Wu, which was preoccupied by *montana* Warncke, 1972. It is similar to *Andrena nigricula* Wu, but it is separated from *nigricula* by the clypeus with a broad median longitudinal impunctate space, and the metasomal terga sparsely punctate in female.

Distribution: China (Xizang, Qinghai, Sichuan, Yunnan Provs.).

Floral association: This species is associated with flowers of the Compositae.

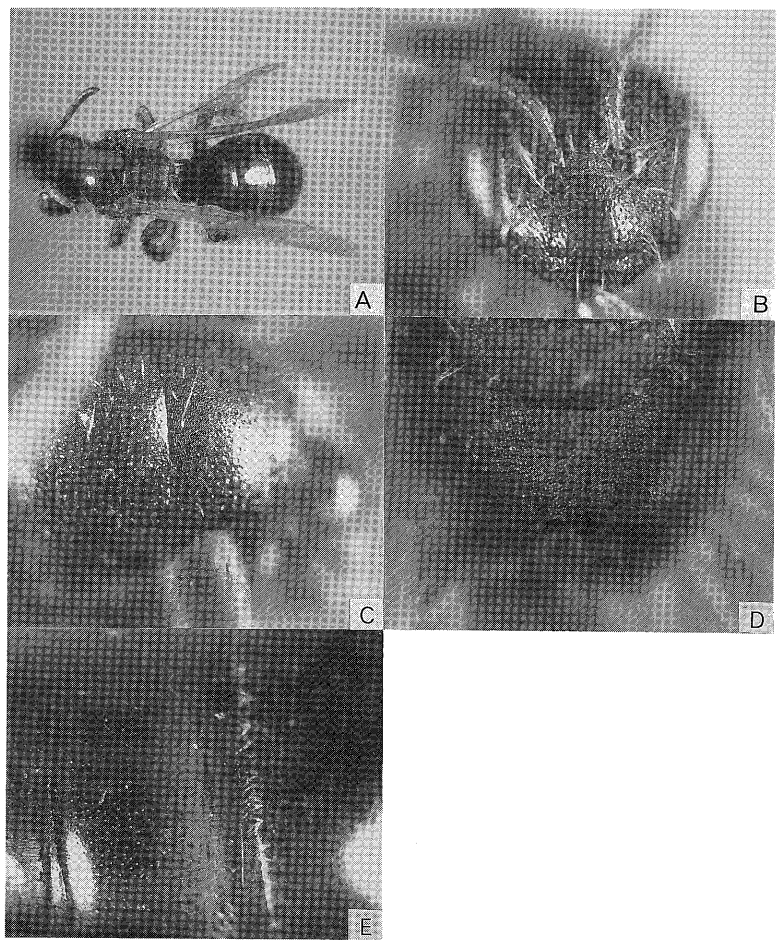

Fig. 4. *Andrena (Oreomelissa) setosifemoralis* Wu nom. n., female. A: whole body; B: head in frontal view; C: mesoscutum; D: propodeum; E: metasomal terga.

6. *Andrena (Oreomelissa) fani* Xu et Tadauchin sp. n.

(Figs. 5: A – E, 6: A – E, 7: A - E)

Female: BL 9.2-9.5 mm, WL 7.3-8.3 mm (n= 10).

Color: Flagellum dark reddish brown beneath; mandible with apical third or more reddened; wing membranes infumate, veins and pterostigma reddish brown; tibial spurs reddish yellow; posterior depressions of metasomal terga dark reddish brown.

Pubescence: Hairs on head and thorax more or less dense, black mixed with pale yellowish; those on clypeus about 500μ, those on vertex 500-600μ, mainly brown; those on genal area 500μ; facial fovea black. Hairs on mesoscutum and scutellum 500-600μ, black mixed with pale; those on propodeum sparse, pale yellow; those on mesepisternum 750μ, mainly whitish; propodeal corbicula poorly developed with short, simple internal hairs; trochanteral floccus nearly perfect, whitish; femoral floccus dense; t ibial scopal

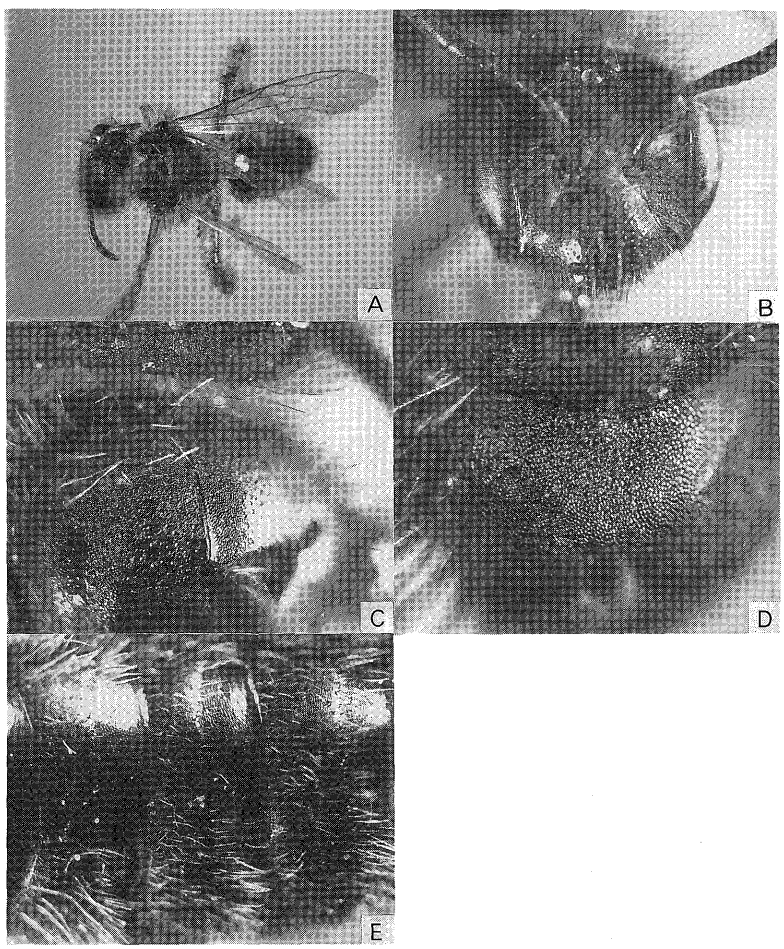

Fig. 5. *Andrena (Oreomelissa) fani* sp. n., female. A: whole body; B: head in frontal view; C: mesoscutum; D: propodeum; E: metasomal terga.

hairs long, simple, whitish mostly, brown above. Hairs on metasomal terga short 150-250μ; those on T1 scanty; those on T2 whitish, dense laterally; T2-4 with short sparse apical fringes laterally, whitish; caudal fimbria brown; S2-5 with well composed white subapical fimbriae.

Structure: *Head*: HL / HW = 0.88. HW : MsW : MtW = 2.5 : 2.7: 1.5. Vertex densely tessellate. OOD : POD : OCD = 0.55 : 0.3 : 0.25. FL1 > FL2 + 3, FL2 = FL3 with broader than long. Eyes with inner margins subparalleled. Facial fovea not extending below a line at lower margins of antennal fossae, narrow, deeply depressed, separated from inner margin of eye by smooth space, FVL = 0.9 mm, FVW = 0.3 mm. Facial quadrangle quadrate (about 1.7 :1.7). Clypeus slightly convex, surface almost smooth and shiny, densely tessellate basally and laterally, punctures irregular in size, shallow with PPø20-40μIS = 0.5 -1, CPL = 0.8 mm. Process of labrum moderate, thickened and rounded apically. Maxillary and labial palpus normal. Lower paraocular area sha-

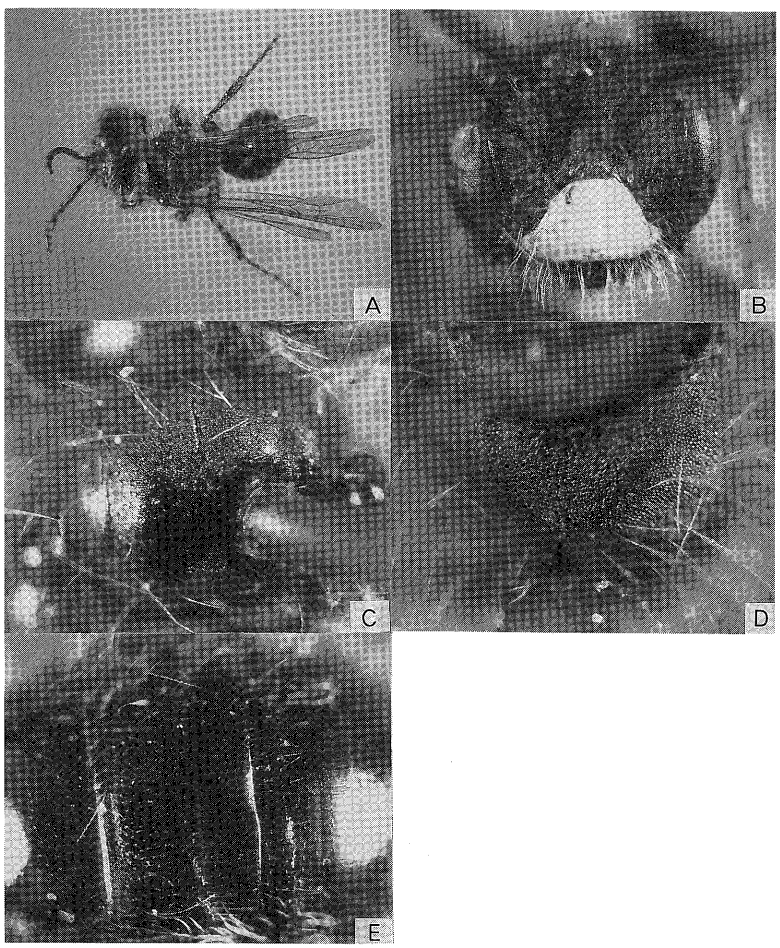

Fig. 6. *Andrena (Oreomelissa) fani* sp. n., male. A: whole body; B: head in frontal view; C: mesoscutum; D: propodeum; E: metasomal terga.

greening. Malar space almost linear, broaden basally. Genal area broader than eye, GW : EW = 0.75 : 0.5, surface shagreening posteriorly, weakly tessellate near eye with crowded minute PP. *Mesosoma*: Pronotum without humeral angle and ridge, surface densely tessellate. Mesoscutum finely tessellate peripherally, weakly tessellate medially with PPø10μ IS = 1-2, weakly shiny. Scutellum shagreening. Propodeal enclosure not well defined, weakly roughened basally; dorsal face densely tessellate, not roughened. Mesepisternum sculptured as in propodeum. Middle basitarsi normal. Hind femora without a row of spines. Fore wings with vein 1st m-cu meeting second submarginal cell near end of cell; 1st intercubital vein not close to pterostigma. *Metasoma*: Metasomal tergum 1 smooth and shiny with irregular microscopic PP; T2-4 weakly tessellate, mediobasal area with microscopic PP, IS =1-3, apical area impunctate, shiny; posterior

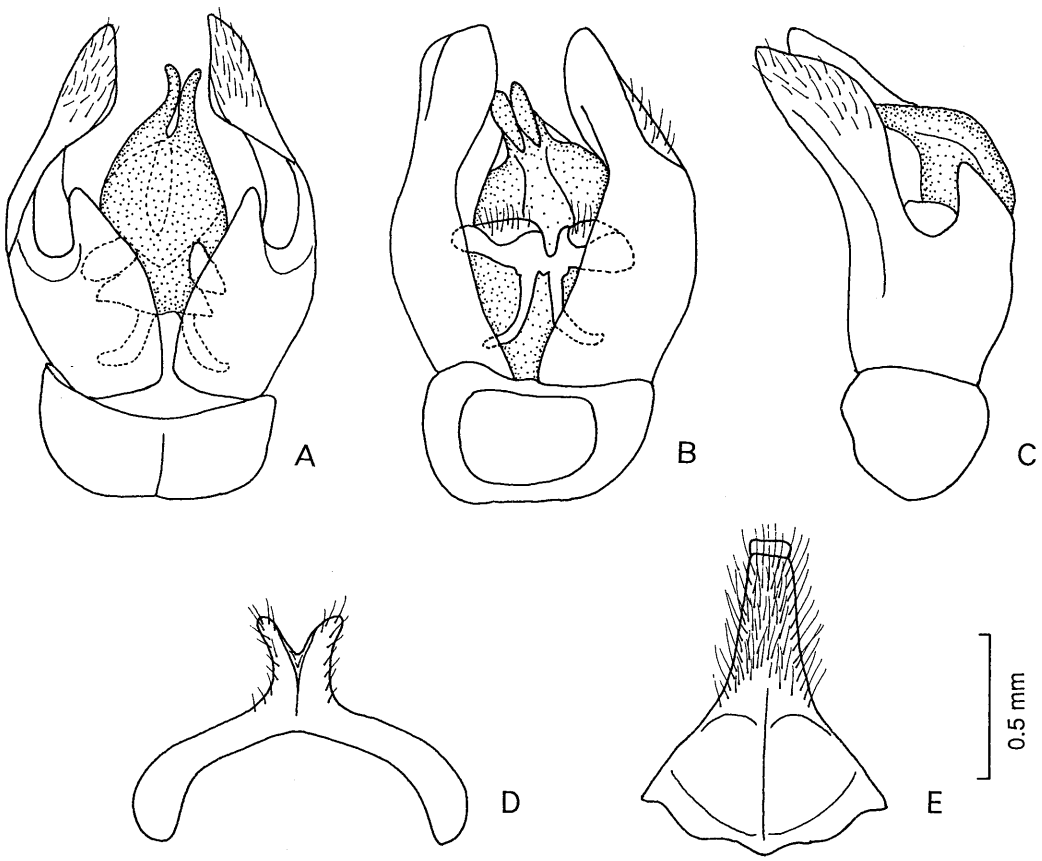

Fig. 7. *Andrena (Oreomelissa) fani* sp. n. Genital capsule and subgenital sterna. A: dorsal view of genital capsule; B: ventral view of the same; C: lateral view of the same; D: metasomal sternum 8; E: metasomal sternum 7.

depressions of terga broad, not well indicated. Pygidial plate V-shaped with raised triangular area. S2-5 weakly tessellate, shiny, impunctate at basal 2/3.

Male: BL 7.5 mm, WL 7.0 mm (n= 8).

Color: Flagellum reddish brown beneath except first 3 segments blackish brown; mandible reddened apically; clypeus yellowish white; wing membranes infumate, veins and pterostigma brown; tibial spurs yellowish; posterior depressions of metasomal terga subhyaline, reddish brown.

Pubescence: Hairs on head as in female; those on clypeus 500μ,, whitish; those on antennal area black; those on vertex 500-750μ, whitish mixed with brown; those on genal area 500-600μ, whitish, brown above; those on dorsum of thorax scanty; those on mesepisternum 750μ,whitish mixed with brown; legs with white hairs. Hairs on metasomal terga sparse, whitish mixed with brown; those on T1-2 400-500μ at lateral margins; those on T3-5 rather short (100μ), brown, slightly long laterally with whitish; S2-5 with not well-formed subapical fimbriae.

Structure: *Head*: HL / HW = 0.83. HW : MsW : MtW = 2.4 : 2.5: 2.4. Vertex densely tessellate. OOD : POD : OCD = 0.7 : 0.35 : 0.3. FL1 > FL2+3, FL2 = FL3. Eyes with inner margins subparalleled. Facial quadrangle about quadrate (about 1.6 : 1.6). Clypeus slightly convex, surface smooth and shiny with microscopic PP, irregular in distribution, CPL = 0.8 mm. Process of labrum convex, emarginate apically. Mandible long, decussate. Lower paraocular area roughened by coarse PP. Malar space linear. Genal area broader than eye, GW : EW = 0.76 : 0.6, surface shagreening as in female. *Mesosoma*: Thoracic surface sculptured as in female. *Metasoma*: Metasomal terga smooth and shiny, T1 with microscopic PP, irregular in distribution; T2-4 with same PP as in T1, IS = 1-3 at basal areas, apical areas without PP; posterior depressions of terga not well indicated. Genitalia and associate sterna as illustrated in Figs. 7: A – E.

Type material: Holotype female: Bigu, Xiaozhongdian, 3800 m, Yunnan Prov., China, 1. viii. 1984 (J-g., Fan); Paratypes: 10 females and 8 males, same locality, date and collector as in holotype; 1 male, Diqing Prefecture, 3800 m, Yunnan Prov., China, 1. viii. 1984 (C-f., Li).

Remarks: This species is similar to *Andrena setosifemoralis* Wu in having black hairs on the head and thorax. But the female is separated from that of *setosifemoralis* by the larger body, the clypeus with close PP, and the hind femora without a row of spines. The male is separated from that of *setosifemoralis* by the lower paraocular area with maculae and the pronotum without distinct humeral angle.

Distribution: China (Yunnan Prov.).

Floral association: Not available.

7. *Andrena* (*Oreomelissa*) *gangcana* Xu et Tadauchi sp. n.

(Figs. 8: A – E, 9: A – E, 10: A – E)

Female: BL 9.0 mm, WL 8.0 mm (n= 2).

Color: Flagellum reddish brown beneath; mandible with apical third reddened; wing membranes infumate, veins and pterostigma yellowish brown; tibial spurs yellowish; posterior depressions of metasomal terga black.

Pubescence: Hairs on head, white to brown; those on clypeus 400-600μ, pale mixed

with brown; those on antennal area brown; those on vertex 500-750μ,brownish to brown; those on genal area 300-500μ, whitish below, brown above; facial fovea black. Hairs on mesoscutum 500-650μ, brown mixed with whitish at anterior margin; those on scutellum brown; those on mesepisternum 700μ, dense, whitish mixed with brown; propodeal corbicula poor, internal area with simple pale hairs; trochanteral floccus perfect, white, femoral floccus dense, tibial scopa developed, whitish mostly, bright brown above. Hairs on metasomal terga short, rather sparse; those on T1 scanty; T2-4 with weak apical fringes laterally, white; caudal fimbria brown; S2-5 with erect, short subapical fimbriae, whitish.

Structure: *Head*: HL / HW = 0.86. HW : MsW : MtW = 2.8 : 3.0 : 3.0. Vertex finely tessellate, feebly shiny. OOD : POD : OCD = 0.65 : 0.35 : 0.25. FL1 > FL2+3, FL2 = FL3 with broader than long. Eyes with inner margins subparalleled. Facial fovea moderate, extending beyond a line at lower margins of antennal fossae, eparated from

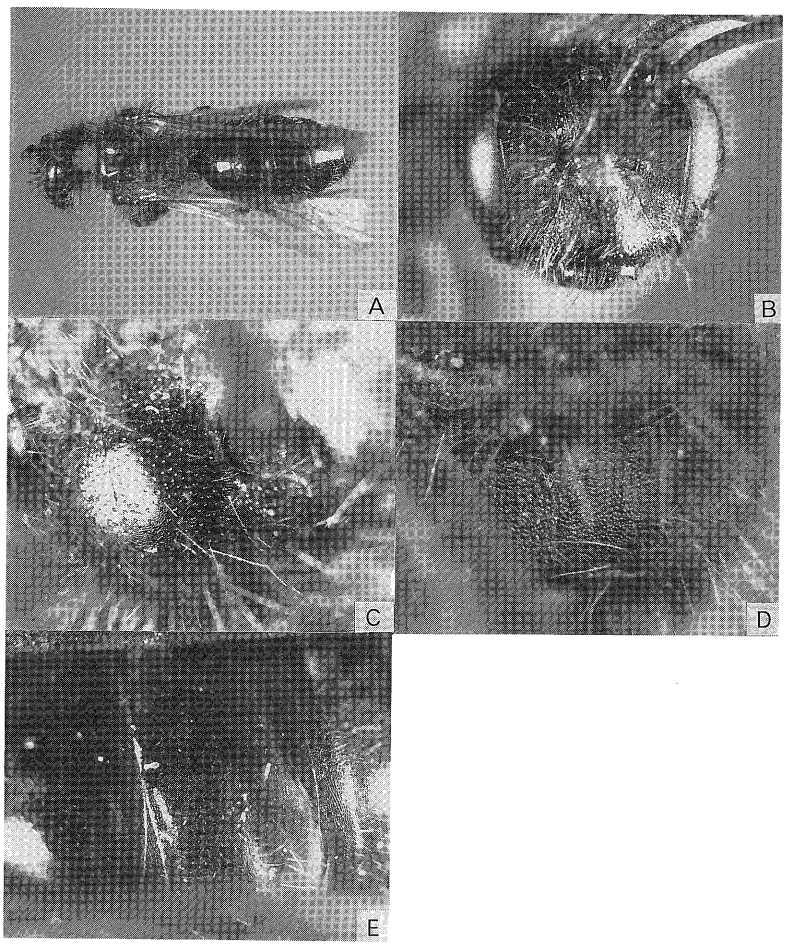

Fig. 8. *Andrena (Oreomelissa) gangcana* sp. n., female. A: whole body; B: head in frontal view; C: mesoscutum; D: propodeum; E: metasomal terga.

inner margin of eye by smooth punctate space, FVL = 1.2 mm, FVW = 0.4 mm. Facialquadrangle about quadrate (about 2.0 : 2.0). Face above antennal fossae with finely longitudinal rugulae, interrugal space with obscure PP, weakly shiny. Clypeus convex medially, weakly tessellate, surface shiny with shallow PPø20-40μ, IS = 1, sparser medially. Process of labrum moderate, thickened and trapezoidal. Lower paraocular area weakly tessellate to weakly shagreening. Malar space almost linear. Genal area broader than eye, GW : EW = 0.8 : 0.66, surface finely tessellate posteriorly, smooth and shiny with close PP near eye. *Mesosoma*: Pronotum without humeral angle and ridge, surface densely tessellate with obscure PP. Mesoscutum densely t essellate anteriorly and posteriorly, weakly tessellate medially, feebly shiny with PPø15μ, IS = 1-2. Scutellum roughened by coarse tessellation. Propodeal enclosure large, finely defined, weakly shagreening; dorsal face densely tessellate without PP, not roughened. Mesepisternum shagreening. Middle basitarsi normal. Hind femora without a row of

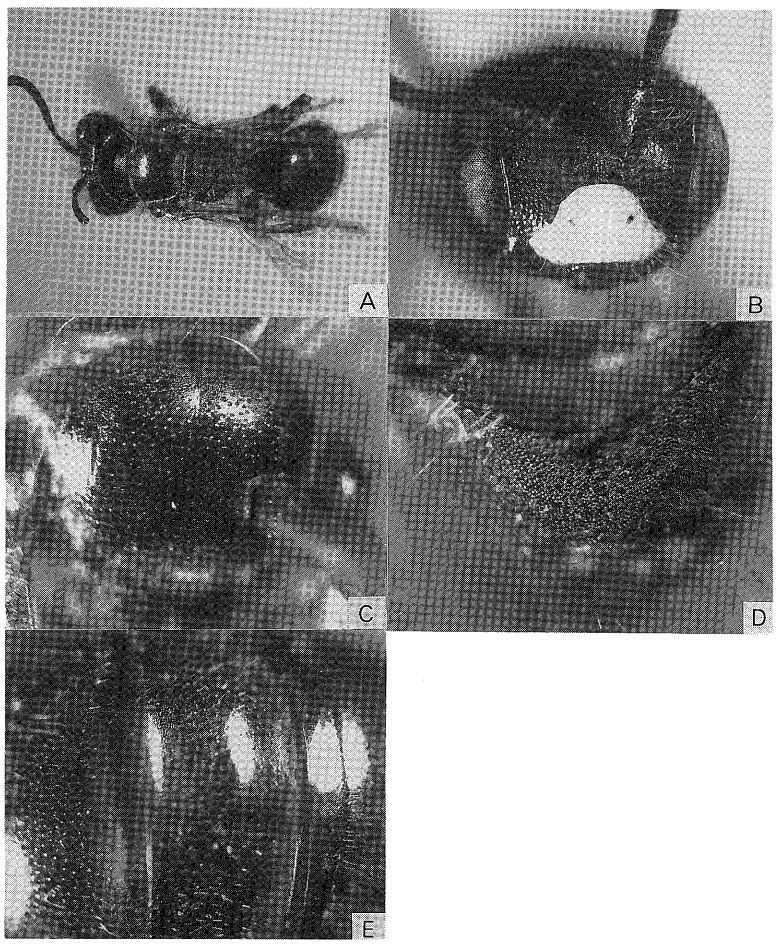

Fig. 9. *Andrena (Oreomelissa) gangcana* sp. n., male. A: whole body; B: head in frontal view; C: mesoscutum; D: propodeum; E: metasomal terga.

spines. Fore wings with vein 1st m-cu meeting second submarginal cell near end of cell. *Metasoma*: Metasomal terga smooth to weakly tessellate; T1 smooth and shiny with rather sparse, obscure PP; T2-4 weakly tessellate, shiny with obscure PP basally; posterior depressions of terga impunctate, broad, not well indicated. Pygidial plate V-shaped with round apex, internal area present. S2-5 finely tessellate with obscure PP apically.

Male: BL 7.7 mm, WL 6.5 mm (n= 1).

Color: Flagellum reddish brown beneath except first 3 segments black; mandible reddened apically; Clypeus yellowish white; wing membranes subhyaline, moderately brown, veins and pterostigma reddish brown; tibial spurs yellowish; posterior depressions of metasomal terga yellowish brown.

Pubescence: Hairs on head sparse, white to black; those on clypeus short (300μ);

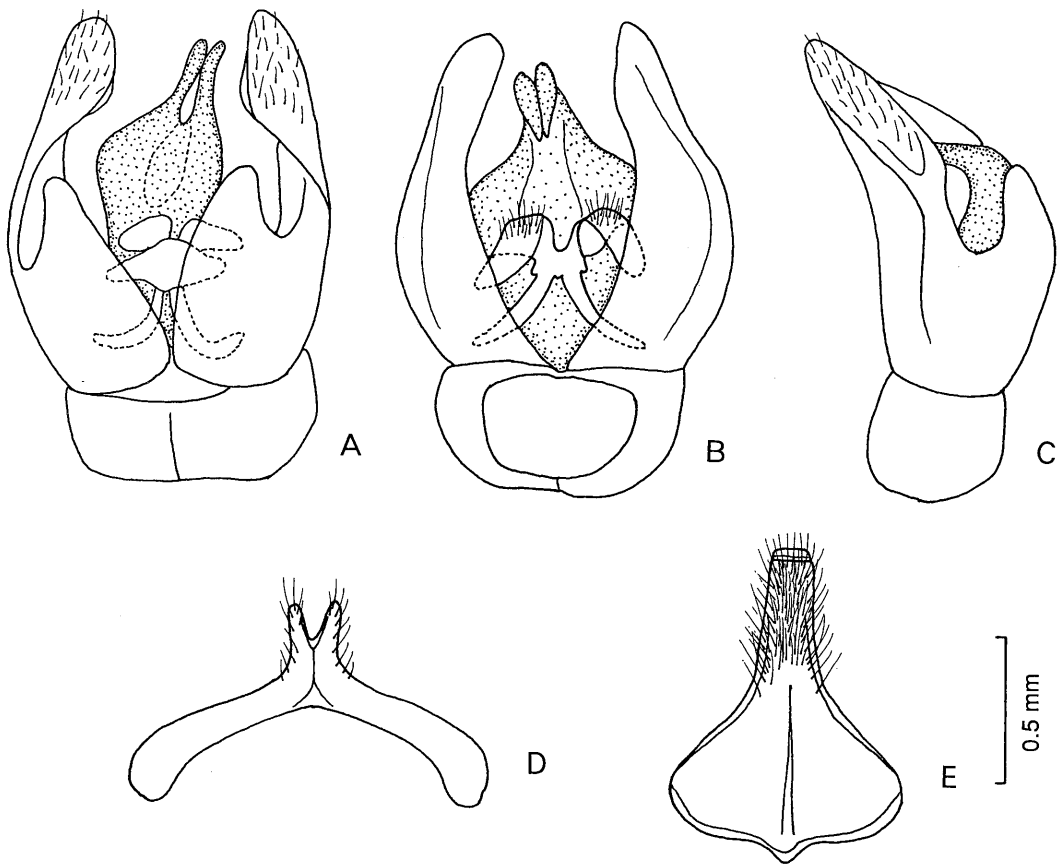

Fig. 10. *Andrena (Oreomelissa) gangcana* sp. n. Genital capsule and subgenital sterna. A: dorsal view of genital capsule; B: ventral view of the same; C: lateral view of the same; D: metasomal sternum 8; E: metasomal sternum 7.

those on antennal area black; those on vertex 300-500μ, whitish; those on genal area more or less dense, whitish mixed with black. Hairs on dorsum of thorax scanty; those on mesepisternum 600-750μ, brown above, whitish below. Hairs on metasomal terga rather short 50-200μ, brown; no fringes on apical margins; S2-5 without well formed subapical fimbriae.

Structure: *Head*: HL / HW = 0.84. HW : MsW : MtW = 2.5 : 2.2 : 2.3. Vertex finely tessellate with sparse minute PP. OOD : POD : OCD = 0.6 : 0.25 : 0.25. FL1 > FL2+3, FL2 = FL3 as long as broad. Eyes with inner margins subparalleled. Face above antennal fossae with weak rugulae, interrugal space with obscure PP, weakly roughened. Facial quadrangle slightly broader than long (about 1.7 :1.6). Clypeus convex medially, surface smooth and shiny with shallow PP, irregular in distribution, CPL = 0.7 mm. Process of labrum trapezoidal, deeply emarginate apically; Mandible
long, decussate. Lower paraocular area weakly tessellate with crowded PPø20μ, IS < 0.5. Malar space almost linear. Genal area broader than eye, GW : EW = 0.8 : 0.65, surface finely tessellate at posterior third, smooth and shiny with close PP near eye. *Mesosoma*: Pronotum without humeral angle and ridge, surface finely to densely tessellate. Mesoscutum weakly tessellate mostly, shiny with PPø10μ, IS = 1-2, densely tessellate anteriorly and posteriorly. Scutellum densely tessellate, shagreening posteriorly. Propodum with enclosure sculptured as in female, but more shagreening at base of enclosure. Mesepisternum densely tessellate with obscure PP. Fore wings with vein 1st m-cu meeting second submarginal cell at end of cell. *Metasoma*: T1 smooth and shiny with microscopic PP irregular in distribution; T2-5 weakly tessellate, shiny with microscopic PP, IS = 1-2 basally, impunctate apically; posterior depressions of terga not well indicated. S2-5 weakly tessellate as in terga. Genitalia and associate sterna are illustrated in Figs. 10: A – E.

Type material: Holotype female: Gangca, 3200 m, Qinghai Prov., China, viii. 14. 1996 (S. Ikudome); Paratypes: Same locality and date as in holotype, 1 female (H-l. Xu); 1 male (S. Ikudome).

Remarks: This species is similar to *fani* sp. n., but the female is separated from that of *fani* by the robust body, the process of labrum triangular, the mesoscutum with distinct PP medially, the scutellum and propodeum strongly tessellate. The male is separated from that of *fani* by the body with scanty hairs and less tessellate, more or less polished.

Distribution: China (Qinghai Prov.).

Floral association: *Brassica campetris*.

8. *Andrena* (*Oreomelissa*) *kamikochiana* Hirashima

Andrena (*Calomelissa*) *kamikochiana* Hirashima, 1963, J. Fac. Agr., Kyushu Univ., 12: 251 [female & male, Japan]; Hirashima, 1966, J. Fac. Agr., Kyushu Univ., 14: 112-113.

Andrena (*Oreomelissa*) *kamikochiana*: Hirashima and Tadauchi, 1975, J. Fac. Agr., Kyushu Univ., 19: 179-180; Tadauchi, 1989, Check List Jap. Insects, 684; Tadauchi *et al.*, 1997, Esakia, (37): 201[female, Korea].

Specimens examined: China: 1 female, Mt. Xiaowutai, 1200 m, Hebei Prov., 12. viii.1964 (Y-h. Han); 1 male, Molida, Mt. Daxinanling, Heilongjiang Prov., 23. vii. 1970; 1 male, Kao-lin-tze, Jilin Prov., 10. viii. 1940. Mongolia: 1 female, Cojbalsan Aimak, 850m, Somon Caluut, 17. viii. 1965 (Z. Kaszab); 1 female, Archangai Aimak, 1620m, Somon Urdtamir, 21. vii. 1966 (Z. Kaszab); 1 male, Central Aimak, 1300m, Olan-Baator, 13. vii. 1963 (Z. Kaszab).

Remarks: This species is newly recorded from China and Mongolia. It is similar to *Andrena submontana* Wu in having the shagreening clypeus, but it can be separated from *submontana* by the hind femora without a row of spines in female. Specimens collected in China and Mongolia have paler hairs on thorax.

Distribution: China (new record: Hebei, Heilongjiang, Jilin Provs.); Mongolia (New record, Somon); Japan (Honshu); Russia (Far East area).

Floral association (Japan): *Solidago virga-aurea* L.

9. *Andrena (Oreomelissa) anthracina* Morawitz

Andrena anthracina Morawitz, 1880, Bull. Acad. Sci. St. Ptersbourg, 26: 359 [female & male, China]; Yasumatsu, 1941, Peking nat. Hist. Bull., 15: 273 [in list].
Andrena (Oreomelissa) anthracina: Xu and Tadauchi, 1997, J. Fac. Agr., Kyushu Univ., 41: 169-171 [redescription].

Specimens examined: Lectotype male and paralectotype, designated by A. Osychnyuk in 1980.

Remarks: This species is similar to *Andrena coitana* (Kirby). But the female is separated from that of *coitana* by the clypeus and metasomal terga less tessellate and strongly shiny, the facial fovea close to inner margin of eye. The male is separated from that of *coitana* by the process of labrum deeply emarginate apically.

Distribution: China (Gansu Prov.).

Floral association: Not available.

10-1. *Andrena (Oreomelissa) coitana coitana* (Kirby)

Melitta coitana Kirby, 1802, Monogr. Apum. Angl. II, 147-148 [male, England].
Andrena coitana (Kirby): Stockhert, 1930, Die Hym. Nord-und Mitteleurop., 939, 951 [female & male, in key];
Andrena shawella Schmiedeknecht, 1882-1884, Apid. Europ., I, 763-765.
Andrena nylanderi Morawitz, 1864, Bull. Soc. Nat. Moscou, XXXYII (2): 445-446.
Andrena (Stenomelissa) coitana: Warncke, 1968, Mem. Est. Mus. Zool. Univ. Coimbra, (307): 38; Osytshnjuk, 1977, Bee-Andrenidae, 12(5): 76.
Andrena (Oreomelissa) coitana: Hirashima and Tadauchi, 1975, J. Fac. Agr., Kyushu Univ., 19: 116.

Specimens examined: China: 1 female, Mt. Tianshan, 2240 m, Xinjiang Auton. Region, 13. vii. 1957 (X-p. Hong); 1 female, Mt. Tianshan, 2480 m, 18. viii. 1957 (S-y. Wang); 1 female, Aletai, 1750 m, Xinjiang, 6. viii. 1960 (S-y. Wang).

Remarks: This nominate subspecies is similar to *Andrena anthracina* Morawitz and

subspecies *coitana pilosodorsata* Alfken. It is separated from them by the characters in the key. It is newly recorded from China.

Distribution: China (new record: Xingjiang); Russia (Far East Area); Europe.

Floral associations: According to Osytshnjuk (1977), it visits flowers of *Leontodon hispidus* and *Campunula rapunculoides*.

10-2. *Andrena (Oreomelissa) coitana pilosodorsata* Alfken

Andrena coitana var. *pilosodorsata* Alfken, 1929, Ark. Zool. , 20A, 16: 6 [female & male, Kamchatka]; Yasumatsu, 1941, Peking nat. Hist. Bull. 15: 275 [in list].

Andrena (Oreomelissa) coitana pilosodorsata: Hirashima and Tadauchi, 1975, J. Fac. Agr., Kyushu Univ., 19: 180-185; Tadauchi, 1989, Check List Jap. Insects, 684; Osytshnjuk, 1995, Key Insects Russ. Far East , 4: 494, 517 [female & male, in key, Russian Far East]; Xu & Tadauchi, 1996, Bull. Biogeog. Soc. Jap., 50: 2.

Andrena amaguensis Cockerell, 1924, Ann. Mag. nat. Hist., 9(14): 179-180 [male, M-Asia].

Specimens examined: Some specimens are cited as follows. the Kuril islands: 4 females and 9 males, Kunashiri Is. (S. Kuwayama and Y. Suginara). Japan: 1 female, Nukabira, Tokachi, Hokkaido, 10. viii. 1965 (Y. Hirashima).

Remarks: This subspecies is separated from the nominate subspecies by the mesoscutum and metasomal terga with scattered, weak PP.

Distribution: Japan (Hokkaido, Kuril Islands); Russia (Kamchatka).

Floral association: Not available.

11. *Andrena (Oreomelissa) flavolateralis* Xu et Tadauchi sp. n.

(Figs. 11: A – E, 12: A – E)

Male: BL 6-6.5 mm, WL 5.5-6.2 mm (n= 4).

Color: Flagellum reddish brown beneath; mandible with apical third or less reddened; clypeus yellowish white except two small brown spots laterally; wing membranes subhyaline, moderately brown, veins and pterostigma reddish brown; tibial spurs yellow; posterior depressions of metasomal terga dark reddish brown.

Pubescence: Hairs on head more or less dense, yellowish to bright brown; those on clypeus short 350μ, sparse medially, dense at extreme angle area, yellowish; those on antennal area bright brown; those on vertex 250-350μ, bright brown; those on genal area rather short above, long basally. Hairs on mesoscutum 750μ, whitish; legs with bright brown hairs. Hairs on metasomal terga short 100-300μ, sparse, brown, whitish laterally; T2-5 without apical fringes; T6 with dense brown hairs. S2-5 with subapical fimbriae, yellowish.

Structure: *Head*: HL / HW = 0.74. HW : MsW : MtW = 2.1 : 1.7 :1.7. Vertex densely tessellate. OOD : POD : OCD = 0.4 : 0.3 : 0.2. FL1 > FL2 +3, FL2 = FL3 as long as broad. Eyes with inner margins subparalleled. Face above antennal fossae with weak rugulae, interrugal space weakly punctate. Facial quadrangle quadrate (about 1.4 : 1.4).

Clypeus well convex medially, surface smooth and shiny with scattered PP, CPL = 0.55 mm. Process of labrum broad and short, entire apically. Mandibles long, decussate. Lower paraocular area weakly tessellate to finely tessellate with close PP. Malar space linear. Genal area as broad as eye, GW : EW = 0.6 : 0.6, surface finely tessellate posteriorly, smooth and shiny with microscopic PP near eye. *Mesosoma*: Pronotum without humeral angle and ridge, surface finely tessellate. Mesoscutum finely tessellate anteriorly and posteriorly, smooth and shiny medially with PPø 10μ, IS = 1-2 or more. Scutellum weakly tessellate with close PP. Propodeal enclosure well defined, weakly rugulose basally, densely tessellate apically; dorsal face finely granulate. Mesepisternum granulate, feebly shiny with sparse PP. Fore wings with vein 1st m-cu meeting second submarginal cell at end of cell. *Metasoma*: metasomal terga smooth and shiny; T1 with scattered microscopic PP; T2-5 with same PP, IS =1-2 basally, impunc-

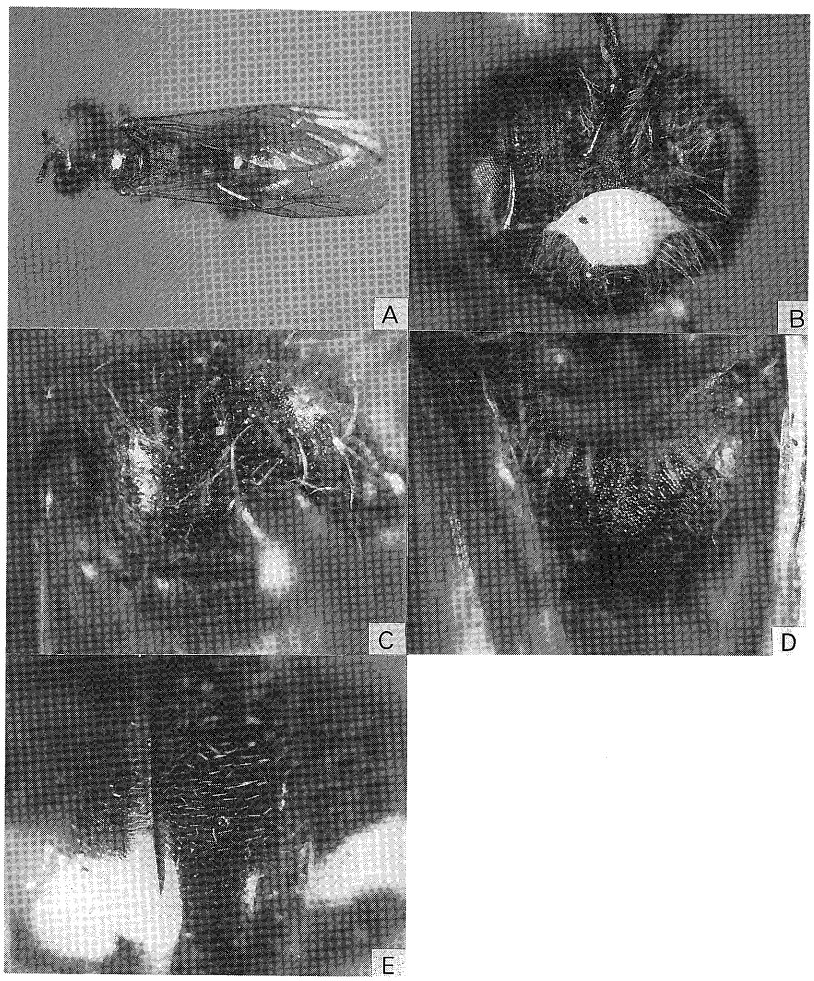

Fig. 11. *Andrena (Oreomelissa) flavolateralis* sp. n., male. A: whole body; B: head in frontal view; C: mesoscutum; D: propodeum; E: metasomal terga.

tate apically; posterior depressions of metasomal terga not well indicated. Pygidial plate V-shaped, without raised triangular area. S2-5 sculptured as in terga. Genitalia and associated sterna are illustrated in Figs. 12: A - E.

Type material: Holotype male: Red flower forest Farm, Shenglongjia, 1,640 m, Hubei Prov., China, 23. vii. 1981 (Y-h., Han); Paratypes: Same locality and collector as in holotype, 2 males, 16. vii. 1981; 1 male, 27. vii. 1981.

Remarks: Males of this species were only collected. It is similar to *Andrena anthracina*, but it can be separated from *anthracina* by the process of labrum broader and entire and the clypeus much elongate laterally in male.

Distribution: China (Hubei Prov.).

Floral association: Not available.

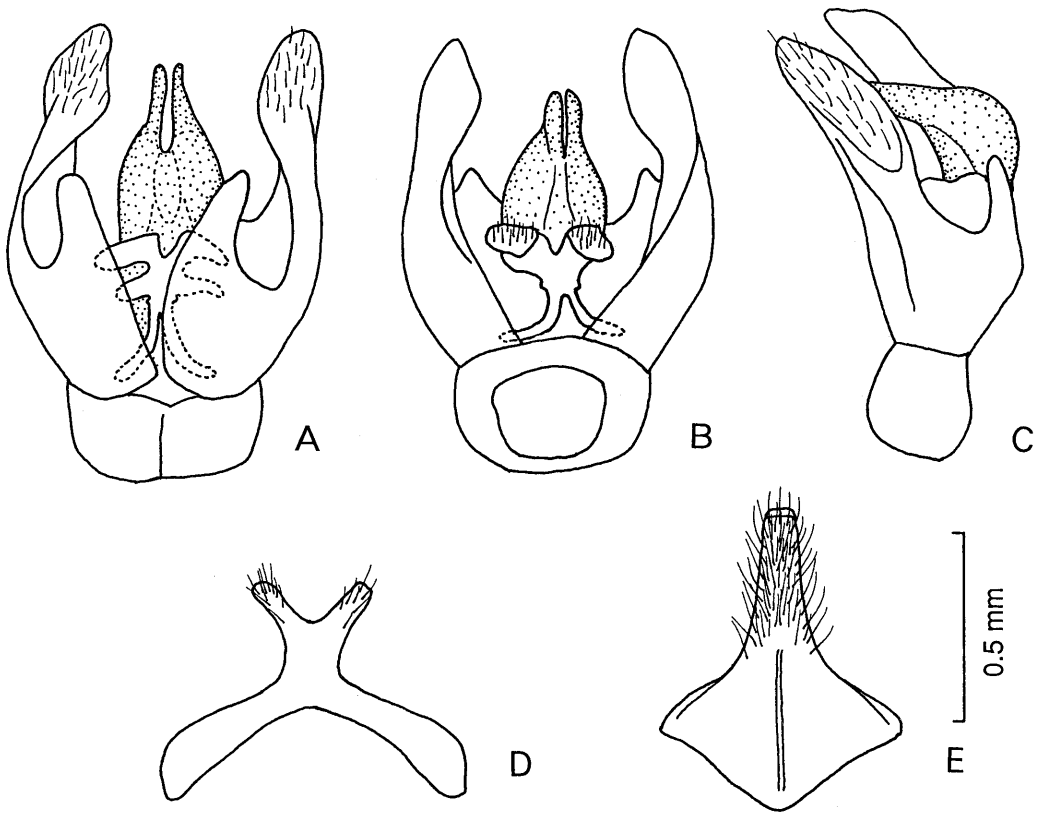

Fig. 12. *Andrena (Oreomelissa) flavolateralis* n. sp. Genital capsule and subgenital sterna. A: dorsal view of genital capsule; B: ventral view of the same; C: lateral view of the same; D: metasomal sternum 8; E: metasomal sternum 7.

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